DATA QUALITY ASSURANCE REVIEW

SITE NAME MILES ROAD LANDFILL

SITE CODE TXD 980697072

PAN Ø6635338

CASE NUMBER 20258

LABORATORY SILVER ANALTICAL INC - Kellogg, IDAHO

SAMPLE NUMBERS			
MFAP 47	MFAP 57	----------	----------
MFAP 48	MFAP 58	----------	----------
MFAP 49	----------	----------	----------
MFAP 50	----------	----------	----------
MFAP 51	----------	----------	----------
MFAP 52	----------	----------	----------
MFAP 53	----------	----------	----------
MFAP 54	----------	----------	----------
MFAP 55	----------	----------	----------
MFAP 56	----------	----------	----------

REVIEWER

INORGANIC CLP DATA REVIEW

CASE #: 20258 SITE NAME: MILES RD LF

TRAFFIC NUMBER	MATRIX	%SOLID	DATE RECD.	Hg HT	CN HT	M HT	MS	DUP	PREP BLANK	COMMENTS
MFAP 47	S	77.9	6/22/93	Y	Y	Y	2	3	1,2,3,4,5	
MFAP 48	S	73.4	6/22/93	Y	Y	Y	1,2	3	2,3,4,5	
MFAP 49	S	76.6	6/22/93	Y	Y	Y	2	3	1,2,3,4,5	
MFAP 50	S	78.6	6/22/93	Y	Y	Y	2	3	2,3,4,5	
MFAP 51	S	74.8	6/22/93	Y	Y	Y	1,2	3	1,2,3,4,5	
MFAP 52	S	75.2	6/22/93	Y	Y	Y	2	3	1,2,3,4,5	
MFAP 53	S	70.3	6/22/93	Y	Y	Y	1,2	3	3,4,5	
MFAP 54	S	79.1	6/22/93	Y	Y	Y	2	3	1,2,3,4,5	
MFAP 55	S	75.7	6/22/93	Y	Y	Y	2	3	1,2,3,4,5	
MFAP 56	S	83.0	6/22/93	Y	Y	Y	2	3	2,3,4,5	
MFAP 57	S	77.5	6/22/93	Y	Y	Y	2	3	2,3,4,5	
MFAP 58	S	74.4	6/22/93	Y	Y	Y	2	3	2,3,4,5	
MFAP 48D	S	73.4	6/22/93	Y	Y	Y	3	3	3,4,5	

CALIBRATION CHECKLIST

I	II	III	IV	V	VI	VII	VIII	IX
SEQ. #	DATE TIME INSTRUMENT INITIAL CALIB.	ICV REC	ICV BLANK	CCV REC	CCV BLANK	ELEMENT(S)	SAMPLES ANALYZED	COMMENTS AND FLAGS
							record the exceptions on Sep 1	
							None	

SPIKE & DUPLICATE CHECKLIST

I	II	III	IV	V
#	SAMPLE # MATRIX SPIKE/DUP	ELEMENTS OUTSIDE LIMITS	SAMPLES AFFECTED	COMMENTS AND FLAGS
1	MFAP48S Matrix Spike Soil	Sb	none	All sample data was already undetected (U)
	"	Cd	MFAP 48, -51, -53	%R < 75%. Samples already listed as B
2	"	Cr	MFAP-48, -51, -53, -48D, -47, -49, -50, -52	%R < 75%. Samples listed as (J).
	"	Cu	MFAP 47, -48, -49, -51, -52, -53, -55, -48D, -50, -54, -56, -57, -58	%R < 75%. Samples listed as (J)
		Zn.	MFAP-47, -48, -49, -50, -51, -52, -53, -54, -55, -56, -57, -58, -48D	%R < 75%. Samples listed as (J).
3	MFAP48D Duplicate Soil	Zn	MFAP 47, -48, -49, -50, -51, -52, -53, -54, -55, -56, -57, -58, -48D	RPD > 35% and analyte concentration > 5x CROL (J)

BLANK CHECKLIST

I	II	III	IV	V
#	MATRIX	ELEMENTS DETECTED AND CONCENTRATION	SAMPLES AFFECTED	COMMENTS AND FLAGS
ICB	Soil	Al 22 ug/l	NONE	NONE
1		Sb 41 ug/l	None	None
		As 1.0 ug/l	MFAP 47, -49, -51, -52 -54 -55	Sample < 5 times Blank (B)
2		Cd 4.0 ug/l	MFAP 48, -51	Sample < 5 times Blank (B)
		Cr 5.0 ug/l	MFAP 47, -49, -50, -58 -52, -54, -55, -56, -57	Sample < 5 times Blank (B)
3		Cu 3.0 ug/l	MFAP-50, -51, -56, -57, -58	Sample < 5 times Blank (B)
		Ni 11.0 ug/l	MFAP-47, -48, -49, -50, -58, 48255, -56 -57 -51, -52, -53, -54,	Sample < 5 times Blank (B)
4		Hg 0.2 ug/l	MFAP-53,	Sample < 5 times Blank (B)
		CN 10 ug/l	MFAP-47, -48, -49, -50, -51, -52, -53, -54, -55, -56, -57, -58, -48D	Samples < 5 times Blank (B)
5		V 11.7 ug/l Highest Value	MFAP-47, -48, -49, -50, -51, -52, -53, -54, -55, -56, -57, -58, -48D	Samples < 5 times Blank (B)
		Na 21.0 ug/l	MFAP-54	Sample < 5 times Blank (5)
		Zn 4.0 ug/l	none	
		Pb 1.8 ug/l Highest	none	

FURNACE AA CHECKLIST

METAL AS IDL 1.0 PAGE 1 OF ___

1	SAMPLE #	48	48D	47	49	50	51	52	53	54
2	DIL. FACTOR	1	1	1	1	1	1	1	1	1
3	ANALYTICAL SPIKE REC	55.04	48.12	46.11	48.58	49.66	53.64	51.65	54.87	47.05
4	IF ANALYTICAL SPIKE RECOVERY IS > 40%, SKIP TO 10 IF ANALYTICAL SPIKE RECOVERY IS < 40%, CONTINUE WITH 5									
5	DILUTED & REANLAYZED (Y/N)									
6	RE DIL.FACTOR									
7	IF 5 IS N, USE GUIDELINES IN 9 AND ENTER DATA EVALUATION IN 27 (END) IF 5 IS Y, CONTINUE WITH 8									
8	REANALYSIS SPIKE REC									
9	IF THE REANALYSIS ANALYTICAL SPIKE RECOVERY IS > 40%, SKIP TO 10 IF THE REANALYSIS ANALYTICAL SPIKE RECOVERY IS < 40%, EVALUATE SAMPLE USING THE HIGHEST RECOVERY AS FOLLOWS AND ENTER THE EVALUATION IN 27 RECOVERY 10-40% CONC AND DL J; RECOVERY < 10% DL R (END)									
10	ANAL SPK REC 85-115% (Y/N)	N	N	N	N	N	N	N	N	N
11	SAMPLE ABS > 50% SPIKE ABS (Y/N)	Y	N	N	N	Y	N	N	N	N
12	IF 10 IS Y AND 11 IS N, ENTER A IN 27 (END) IF 10 IS Y AND 11 IS Y, CONTINUE WITH 13 IF 10 IS N, SKIP TO 19, MSA IS REQUIRED IF 11 IS Y MSA IS NOT REQUIRED IF 11 IS N BUT MAY BE DONE									
13	CV OR RSD < 20% (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y
14	IF 13 IS Y ENTER A IN 27 (END); IF 13 IS N CONTINUE WITH 15									
15	REANALYZED (Y/N)									
16	IF 15 IS N ENTER J IN 27 (END); IF 15 IS Y CONTINUE WITH 17									
17	REANALYSIS CV RSD <20% (Y/N)									
18	IF 17 IS Y ENTER A IN 27 (END); IF 17 IS N ENTER J IN 27 (END)									
→ 19	MSA (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y
20	IF 19 IS N, ENTER J IN 27 (END): IF 19 IS Y CONTINUE WITH 21									
→ 21	CC > 0.995 (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y
22	IF 21 IS Y ENTER A IN 27 (END): IF 21 IS N CONTINUE WITH 23									
23	RE MSA (Y/N)									
24	IF 23 IS N ENTER J IN 27 (END): IF 23 IS Y CONTINUE WITH 25									
25	RE MSA CC > 0.995 (Y/N)									
26	IF 25 IS N ENTER J IN 27 (END): IF 25 IS Y ENTER A IN 27 (END)									
27	EVALUATION	A	A	A	A	A	A	A	A	A

FURNACE AA CHECKLIST

1. DUPLICATE INJECTION RESULTS:

A. Did any sample with a reported concentration greater than the CRDL have a duplicate injection %RSD or CV greater than ± 20%? N (Y or N)

B. If 1A was Y, were the samples re-analyzed? _____ (Y or N)

C. If 1B was Y, was the re-analysis %RSD or CV greater than ± 20%? _____ (Y or N)

IF CRITERIA WERE OUT OF LIMITS FOR REPORTED DATA, EVALUATE THE DATA BELOW. INCLUDE ELEMENT, SAMPLE NUMBER, %RSD OR CV AND FLAGS.

2. ANALYTICAL SPIKE RESULTS:

A1. Did any sample have analytical spike (post digestion) recoveries less than 40% ~~40%~~? N (Y or N)

A2. If Y, were the samples diluted and reanalyzed? _____ (Y or N)

A3. If Y, were the re-analysis analytical spike recoveries less than 40%? _____ (Y or N)

IF CRITERIA WERE OUT OF LIMITS FOR REPORTED DATA, EVALUATE THE DATA BELOW. INCLUDE ELEMENT, SAMPLE NUMBER, PERCENT RECOVERY AND FLAGS.

FURNACE AA CHECKLIST PAGE 2

2. ANALYTICAL SPIKE RESULTS CONTINUED:

B. Were there any samples with an analytical spike recovery of less than 85% or greater than 115% with the sample absorbance less than 50% of the spike absorbance? Y (Y or N)

IF B WAS ANSWERED Y FOR ANY REPORTED DATA, EVALUATE THE DATA BELOW.
INCLUDE ELEMENT, SAMPLE NUMBER, SPIKE RECOVERY AND FLAGS.
MSA was conducted for these samples

C1. Were there any samples with analytical spike recovery less than 85% or greater than 115% whose sample absorbance was greater than 50% of the spike absorbance? Y (Y or N)

C2. If Y, was the Method of Standard Addition used for quantification? Y (Y or N)

IF C2 WAS ANSWERED N, EVALUATE THE DATA BELOW.
INCLUDE ELEMENT, SAMPLE NUMBER, SPIKE RECOVERY AND FLAGS.

3. METHOD OF STANDARD ADDITION:

A. Was the Method of Standard Addition used for the quantification of any sample? Y (Y of N)

B. If Y, were all of the correlation coefficients greater than 0.995? Y (Y or N)

IF B WAS ANSWERED N, LIST THE DEFICIENCIES AND EVALUATE BELOW.
INCLUDE ELEMENT, SAMPLE NUMBER, CORRELATION COEFFICIENT AND FLAG.

QC REQUIREMENTS

Y At least one preparation blank must be prepared and analyzed for every 20 samples or each batch digested of a given matrix, whichever is more frequent.

Y At least one matrix spike analysis must be conducted for every 20 samples of a given matrix or for each case, whichever is greater.

Y At least one duplicate analysis must be conducted for every 20 samples for a given matrix or for each case, whichever is greater.

Y A CRDL standard for ICP or AA must be analyzed in each analytical sequence (Form 2B).

Y Instrument Detection Limits must be determined quaterly (Form 10).

Y ICP Interelement Correction Factors must be determined annually (Form 11).

Y ICP Linear Ranges must be determined quarterly (Form 12).

Summary Table.

FURNACE AA CHECKLIST

METAL Pb IDL 1.045/e PAGE 1 OF ___

1	SAMPLE #	50	51	52	53	54	55	56	57	58
2	DIL. FACTOR	4	3		8	4	2	4	1	1
3	ANALYTICAL SPIKE REC	129.88	131.57		120.35	137.00	125.83	129.32	125.89	131.47
4	IF ANALYTICAL SPIKE RECOVERY IS > 40%, SKIP TO 10 IF ANALYTICAL SPIKE RECOVERY IS < 40%, CONTINUE WITH 5									
5	DILUTED & REANLAYZED (Y/N)									
6	RE DIL.FACTOR									
7	IF 5 IS N, USE GUIDELINES IN 9 AND ENTER DATA EVALUATION IN 27 (END) IF 5 IS Y, CONTINUE WITH 8									
8	REANALYSIS SPIKE REC									
9	IF THE REANALYSIS ANALYTICAL SPIKE RECOVERY IS > 40%, SKIP TO 10 IF THE REANALYSIS ANALYTICAL SPIKE RECOVERY IS < 40%, EVALUATE SAMPLE USING THE HIGHEST RECOVERY AS FOLLOWS AND ENTER THE EVALUATION IN 27 RECOVERY 10-40% CONC AND DL J; RECOVERY < 10% DL R (END)									
10	ANAL SPK REC 85-115% (Y/N)	N	N		N	N	N	N	N	N
11	SAMPLE ABS > 50% SPIKE ABS (Y/N)	Y	Y		Y	Y	Y	Y	Y	Y
12	IF 10 IS Y AND 11 IS N, ENTER A IN 27 (END) IF 10 IS Y AND 11 IS Y, CONTINUE WITH 13 IF 10 IS N, SKIP TO 19, MSA IS REQUIRED IF 11 IS Y MSA IS NOT REQUIRED IF 11 IS N BUT MAY BE DONE									
13	CV OR RSD < 20% (Y/N)									
14	IF 13 IS Y ENTER A IN 27 (END); IF 13 IS N CONTINUE WITH 15									
15	REANALYZED (Y/N)									
16	IF 15 IS N ENTER J IN 27 (END); IF 15 IS Y CONTINUE WITH 17									
17	REANALYSIS CV RSD <20% (Y/N)									
18	IF 17 IS Y ENTER A IN 27 (END); IF 17 IS N ENTER J IN 27 (END)									
19	MSA (Y/N)	Y	Y		Y	Y	Y	Y	Y	Y
20	IF 19 IS N, ENTER J IN 27 (END): IF 19 IS Y CONTINUE WITH 21									
21	CC > 0.995 (Y/N)	Y	Y		N	Y	Y	Y	Y	Y
22	IF 21 IS Y ENTER A IN 27 (END): IF 21 IS N CONTINUE WITH 23									
23	RE MSA (Y/N)				Y					
24	IF 23 IS N ENTER J IN 27 (END): IF 23 IS Y CONTINUE WITH 25									
25	RE MSA CC > 0.995 (Y/N)									
26	IF 25 IS N ENTER J IN 27 (END): IF 25 IS Y ENTER A IN 27 (END)									
27	EVALUATION	A	A		J	A	A	A	A	A

FURNACE AA CHECKLIST

1. DUPLICATE INJECTION RESULTS:

A. Did any sample with a reported concentration greater than the CRDL have a duplicate injection %RSD or CV greater than ± 20%? N (Y or N)

B. If 1A was Y, were the samples re-analyzed? _____ (Y or N)

C. If 1B was Y, was the re-analysis %RSD or CV greater than ± 20%? _____ (Y or N)

IF CRITERIA WERE OUT OF LIMITS FOR REPORTED DATA, EVALUATE THE DATA BELOW. INCLUDE ELEMENT, SAMPLE NUMBER, %RSD OR CV AND FLAGS.

2. ANALYTICAL SPIKE RESULTS:

A1. Did any sample have analytical spike (post digestion) recoveries less than 40% ~~40%~~? N (Y or N)

A2. If Y, were the samples diluted and reanalyzed? _____ (Y or N)

A3. If Y, were the re-analysis analytical spike recoveries less than 40%? _____ (Y or N)

IF CRITERIA WERE OUT OF LIMITS FOR REPORTED DATA, EVALUATE THE DATA BELOW. INCLUDE ELEMENT, SAMPLE NUMBER, PERCENT RECOVERY AND FLAGS.

FURNACE AA CHECKLIST PAGE 2

2. ANALYTICAL SPIKE RESULTS CONTINUED:

B. Were there any samples with an analytical spike recovery of less than 85% or greater than 115% with the sample absorbance less than 50% of the spike absorbance? N (Y or N)

IF B WAS ANSWERED Y FOR ANY REPORTED DATA, EVALUATE THE DATA BELOW.
INCLUDE ELEMENT, SAMPLE NUMBER, SPIKE RECOVERY AND FLAGS.

C1. Were there any samples with analytical spike recovery less than 85% or greater than 115% whose sample absorbance was greater than 50% of the spike absorbance? Y (Y or N)

C2. If Y, was the Method of Standard Addition used for quantification? Y (Y or N)

IF C2 WAS ANSWERED N, EVALUATE THE DATA BELOW.
INCLUDE ELEMENT, SAMPLE NUMBER, SPIKE RECOVERY AND FLAGS.

3. METHOD OF STANDARD ADDITION:

A. Was the Method of Standard Addition used for the quantification of any sample? Y (Y of N)

B. If Y, were all of the correlation coefficients greater than 0.995? N (Y or N)

IF B WAS ANSWERED N, LIST THE DEFICIENCIES AND EVALUATE BELOV.
INCLUDE ELEMENT, SAMPLE NUMBER, CORRELATION COEFFICIENT AND FLAG.

Sample MFAP 53 was run twice with the Method of Standard Addition. Both times the correlation coefficient was less than 0.995. Analyte was flagged (J).